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<p>8-569505/49 A41 E19 G02 L05 (A28 BADI 97.04.22 A89)</p> <p>ASF AG</p> <p>97.04.22 97DE-1016822 (98.10.29) C07C 69/92, 67/28, 67/30, C09B 67/20, C09D 133/14, C09K 19/38, G02F 1/13, G02B 1/04, C09K 19/20, C09D 4/00, C07C 69/88, 69/91</p> <p>liquid crystalline compounds having a wide liquid crystalline range - are produced in high purity in a process having fewer steps than prior art methods</p> <p>C98-171281</p> <p>Addnl. Data: SCHUHMACHER P, MEYER F, ETZBACH K, SIEMENSMEYER K</p>	<p>A(1-F, 9-A2A) E(7-H, 10-A11B1, 10-A12C1, 10-A13B1, 10-A15, 10-A16A, 10-A20A, 10-B1, 10-B2, 10-B3, 10-B4, 10-C2, 10-C3, 10-C4, 10-D1, 10-D3, 10-E2P, 10-F2A, 10-G2, 10-G3A, 10-H1, 24-B, 25-E) G(2-A2B, 2-A5) L(3-D1D1)</p>
<p>A process for the production of liquid crystalline compounds (1) or mixture of compounds of formula (1) is claimed by mixing (a) a compound a formula (2a) with one or more compounds of formulae (3a) and (3b), or (b) a compound of formula (2b) with one or more compounds of (3a), or (c) a mixture of compounds of formulae (2a) and (2b) with one or more compounds of formulae (3a) and (3b), and (1) optionally mixing the product(s) arising from (a), (b) and/or (c) in any weight ratio.</p>	<p>$Y^{31}-M-Y^{41}$ (2a)</p> <p>$P^1-Y^1-A^1-Y^{32}$ (3a)</p> <p>$P^2-Y^2-A^2-Y^{42}$ (3b)</p> <p>$Y^{31}-M-O-A^2-Y^2-P^2$ (2b)</p> <p>$P^1, P^2 = H, 1-4C$ alkyl or a reactive group that can take part in a polymerisation reaction;</p> <p>$Y^1, Y^2 =$ single bond, oxygen, sulphur, $-O-CO-$, $-CO-O-$, $-O-CO-O-$, $-CO-NR$, $-NR-CO-$, $-O-CONR-$, $-NR-CO-O-$ or $-NR-CO-NR-$;</p> <p>$R = H$ or $1-4C$ alkyl;</p> <p>$A^1, A^2 = 1-30C$ spacer group containing a carbon chain optionally contain ether O, thioether S, non-neighbouring imino or $1-4C$</p>
<p>$P^1-Y^1-A^1-O-M-O-A^2-Y^2-P^2$ (1)</p>	<p>DE 19716822-A+</p>

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alkyl imino linkages;

4 = a mesogenic group;

(31) Y^{41} = -OH or -CO; and

(32) Y^{42} = a leaving group.

Also claimed are

(i) a composition comprising (I: P^1 and P^2 = H or 1-4C alkyl) and optionally other additives;

(ii) a process for the printing of objects or production of a coating containing (I) and optionally other additives on a substrate with optionally performing an orientation step followed by polymerisation;

(iii) the resulting printed or coated objects;

(iv) liquid crystalline colouring agents containing (I);

(v) aqueous emulsions or dispersions containing (I); and

(vi) pigments prepared by formation of a thin film containing (I) or by printing (I) onto a substrate, followed by polymerisation, removal of the film from the substrate and grinding the polymeric mass to form the pigment.

USE

The liquid crystalline compound (I) is useful for the production of optical components and liquid crystalline colouring agents (claimed).

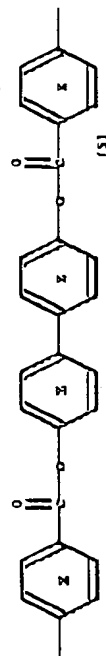
ADVANTAGE

The liquid crystalline compound (I) is produced cost effectively in fewer steps and with higher purity than prior art processes. (I) have a large liquid crystalline region.

PREFERRED PROCESS

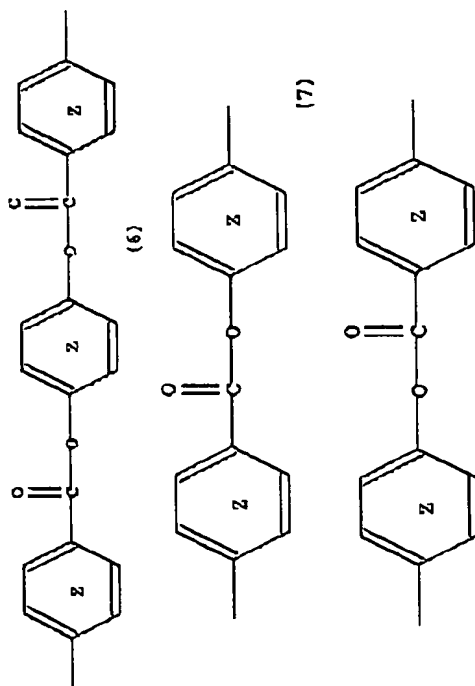
M is of formula (4)-(8).

(-T-Y⁵)_n-T- (4)



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Z = a bivalent saturated or unsaturated iso- or heterocyclic group;
 Y¹ = Y² or -O-CH₂-, -CH₂-O-, -N=CH- or -N=N-;
 x = 0, 1, 2 or 3; and

each ring Z is optionally substituted by up to 3 substituents consisting of H, 1-20C alkyl, alkoxy, alkoxycarbonyl, monoalkyl aminocarbonyl, alkyl carbonyl, alkylcarbonyloxy, alkylcarbonylamino or formyl, halogen, cyanide, hydroxy or nitro.

EXAMPLE

0.27 moles of compound of formula (A) was mixed with 0.59 moles compound of formula (B), 0.59 moles K₂CO₃, 0.5 g KI and a small quantity of Kerbit BHT (RTM) in 100 ml dimethyl formamide for 6 hours at 100°C. The reaction mixture was poured into dilute hydrochloric acid and the product removed and recrystallised from ethanol. The resulting product of formula (C) was produced in 80-95% yield and underwent a phase change from crystalline to nematic at 78°C and from nematic to isotropic at 122°C.

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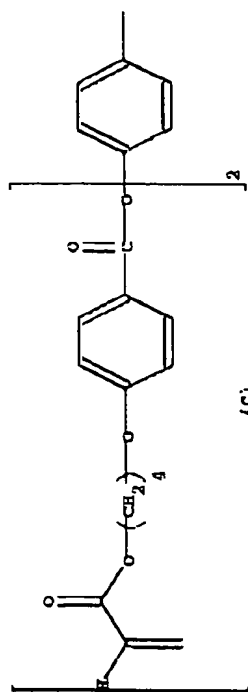
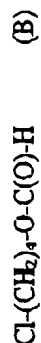
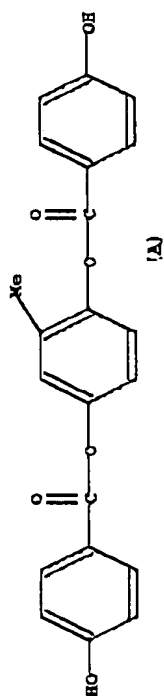
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